**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

| **Number**  Using numbers and the number system – whole numbers, fractions, decimals and percentages | **Algebra**  Using numbers and the number system –  whole numbers,  fractions, decimals and percentages | **Ratio, proportion,**  **and rates of change**  Using common  measures, shape and space | **Geometry and**  **measures**  Using common  measures, shape and space | **Probability**  Handling information and data | **Statistics**  Handling information and data |
| --- | --- | --- | --- | --- | --- |
| Place value | Integers and powers | Ratio | Measure | Combined events | Comparisons |
| Fractions decimals and percentages | Algebra | Proportion | Angles and lines | Tables, grids, and  diagrams | Tables, charts, and diagrams |
| Factors and  multiples | Vocabulary and  manipulation | Rates of change | Shape | Frequency | Correlation |
| Calculations | Graphs | Comparisons | Transformations | Randomness | Mean, median,  mode, modal |
| Estimations | Sequences | Data | Vectors | Likelihood | Predictions and  estimations |

1



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

| **Intent** | **Implementation** | **Impact** |
| --- | --- | --- |
| TCES to…  • adopt a cross company approach • ensure that pupils enjoy their  mathematical learning experience  and leave school with the ability to  calculate and apply their  mathematical skills to real life  situations.  • ensure our pupils are equipped with transferable mathematical skills to  become confident and numerate  individuals who can also inspire others around them.  At TCES we consider Maths an exciting and essential part of our pupils’ learning that enables them to access the National Curriculum and opens opportunities for progression from their starting points.  We provide pupils with the essential skills to improve their numerical ability so they can: • Manage real life problems  • Access employment | Staff to…  • provide our pupils with the appropriate mathematical tools and skills to enable them to access further education and the world of employment.  • encourage pupils to be able to apply their skills in mathematics in in their  further, higher education and/or work settings as well as in their daily life.  • provide activities which help pupils to develop an appreciation of  Mathematics in the real world through cross curriculum projects including  Science and the Arts.  We will liaise and arrange with outside organisations to deliver workshops relevant for our pupils. Pupils will have the opportunity to go on education trips – Bletchley Park, The National Science Museum, Bank of England and other similar settings. These educational visits are aimed at broadening pupils’ learning, knowledge, appreciation and enjoyment of mathematical concepts and theories and how they impact their daily life. | Pupils to leave our schools with:  • An appreciation for Maths as a  practical real-life subject.  • Maths qualifications at their highest possible level in relation to their  starting points - Entry Level, Functional Skills, GCSE and for our most gifted  pupils A Level, qualifications.  • The appropriate level of numeracy needed to support them in their  working lives as well as strengthen  their independence  • Pupil progress is measured against their starting points.  • Evidence will be seen in books  through sequencing and marking,  pupil conversations, half termly  assessment and exam qualifications. • Progress and appreciation of Maths will be seen in displays of work  accomplished, reporting on trips. |

2



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

| • Solve problems in their working  environment  • Access further/higher  education requiring competency  in Mathematics  Maths is an exciting subject which can open many opportunities for our pupils, and we want to open these doors for them and give them the skills to open these doors for themselves. | The curriculum is made up of three blocks roughly equivalent to elements of key stages and entry levels.  **Block 1- KS2/Primary Gaps/EL1/EL2**  **Block 2-KS3/EL3/L1**  **Block 3- KS4/L2/GCSE**  **Block 3 is sequentially laid out with colour coding as below**  FS L2  GCSE foundation  GCSE higher tier  This provides a variety of knowledge blocks that can be built upon sequentially. Pupils are not necessarily working at age related levels. The curriculum is divided into three units which link to functional skills levels, National curriculum stages and GCSE specifications.  Teachers can pick lessons from each unit at appropriate levels for their pupils, to create 6- week lesson planners e.g.: 1 lesson (repeated) from each of the 3 units spread over a 6 week half term.  Our curriculum reflects the complex needs of our pupils. Teacher assessments ascertain ‘where pupils are’ in terms of their knowledge and understanding of various topics. The |  |
| --- | --- | --- |

3



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | teaching programme is then adjusted to reflect the needs of the class as well as individual pupils regarding this. Teaching considers the ability, age, readiness and cultural backgrounds of all TCES pupils and is tailored accordingly. |  |
| --- | --- | --- |

4



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | **Using numbers and the number system – whole numbers, fractions,**  **decimals and percentages** | **Activities** | **Resources and Therapeutic Input** | **Learning Objectives 71** | **Cross Curricula**  **Links** |
| --- | --- | --- | --- | --- | --- |
| **L2** | **L2.1** Read, write, order and compare positive and  negative numbers of any size  Key words:  positive, negative, order, compare, mathematical operations, sum, difference, product, quotient, place value, level of accuracy, | Briefly review positive and negative numbers. Show real-life examples of positive and  negative values  (temperatures,  elevations).  Provide sets of cards with positive and  negative numbers.  Pupils sort the cards and create a table with two columns.  They compare numbers in each column and identify relationships (bigger, smaller, equal).  "Number Line  Challenge":  Create a large number line on the floor or wall. Pupils take turns to  stand on a number and say whether it's positive or negative and  compare with  classmates.  Learners may lack  understanding that the position of a numeral gives it a particular  value. | Nurturing, non-judgemental,  and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you read and write numbers of any size (both written in words and using digits)?  Can you explain the value represented by a specific digit in a given number?  Can you place  numbers of any size in ascending and/or  descending order,  including positive and negative numbers?  Can you compare  numbers using greater than and less than  symbols? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

5



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Learners may not  understand the value a digit represents in large numbers which have a zero in the middle, e.g., they may consider  10,148 to be one  thousand one hundred and forty-eight.  Learners may not  understand that  negative numbers are ordered in ascending order starting from the lowest value, which is represented by the  highest numeral.  Learners may make arithmetical errors due to an inability to recall timetables or a lack of checking procedures. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.2** Carry out calculations with numbers up to one million including strategies to check answers including estimation and  approximation  Key words: | Discuss the concept of numbers up to one  million and why  accurate calculations are essential.  Pupils solve real-life  problems involving  large numbers, using estimation and | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you add, subtract, multiply and divide  positive and negative numbers (up to one million)?  Can you understand and use approximation, rounding, estimation and reverse calculation | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

6



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | significant figure, estimation, rounding, approximation, reverse calculation | approximation  techniques to check their answers.  Pupils participate in a "Millionaire's Challenge," where they work in pairs to create and solve large number puzzles for each other.  Engage in a scavenger hunt, searching for  objects with labelled values up to one million to reinforce  understanding.  Learners may lack  understanding that the position of a numeral gives it a particular  value.  Learners may not  understand the value a digit represents in large numbers which have a zero in the middle, e.g., they may consider  10,148 to be one  thousand one hundred and forty-eight. | Counters, number lines  kinaesthetic activities,  interactive smart board games | as valid checking  methods? |  |
| --- | --- | --- | --- | --- | --- |

7



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Learners may make arithmetical errors due to an inability to recall timetables or a lack of checking procedures. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.3** Evaluate expressions and make substitutions in given formulae in words and symbols  Key words:  substitution, constant,  variable, order of operations (BIDMAS) | Introduce evaluating expressions and making substitutions in formulas, explaining their  relevance in real-world applications.  Pupils solve real-life  problems using given formulae and substitute appropriate values  (e.g., calculating the area of a room using the area formula).  Pupils create their own mini "math recipe book" with formulas for  cooking and bake a simple recipe, making ingredient substitutions to understand the  concept practically.  Pupils solve a set of  expression evaluation | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you substitute a correct value for a  variable in a formula?  Can you evaluate  expressions in a given formula?  Can you follow the  correct order of  operations to evaluate a formula?  Can you show  understanding of the principles for  rearranging formulae? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

8



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | and substitution  problems individually.  Learners may substitute incorrect values into a formula.  Learners may not  understand that a  constant and variable placed together should be multiplied, e.g., 2d = 2 × d.  Learners may not follow BIDMAS, especially  when brackets are  used.  Learners may not know or understand how to calculate with indices. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.4** Identify and know the equivalence between  fractions, decimals, and percentages.  Key words:  place value, conversion, equivalence, common denominator, simplifying | Introduce the concept of fractions, decimals, and percentages and their interrelation.  Provide pupils with  fraction, decimal, and percentage cards. Ask them to match  equivalent values  independently.  Play math games like "Fraction-Decimal | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you recognise and calculate equivalences between fractions,  percentages, and  decimals? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

9



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Percentage Bingo" to reinforce  understanding.  Individual Practice:  Pupils solve conversion problems in their  notebooks.  Learners may confuse equivalences, e.g., 2/5 with 25% or 0.25.  Learners may convert decimals into  percentages  incorrectly, e.g., 0.64 = 6.4%.  When simplifying,  learners may simplify the denominator only, rather than the whole fraction. | interactive smart board games |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.5** Work out percentages of amounts and express one amount as a percentage of another.  Key words:  place value, discount,  interest rate, mortgage, | Introduce percentages and their relevance in real-life situations.  Pupils learn to calculate percentages of  amounts using mental and written methods. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you work out  percentages of  quantities?  Can you express one amount as a  percentage of  another? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

10



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | savings, profit margin, tax, percentage  increase/decrease | Engage pupils in a  baking activity where they measure  ingredients and  calculate the  percentage of each ingredient in the recipe.  Pupils express one  ingredient's amount as a percentage of the total ingredients used in the recipe.  Learners may believe that increasing a  number by x% is the same as increasing the number by x.  Learners may make place value errors  when converting  between percentages and decimals, e.g.,  they may believe 0.67 = 6.7%. | Counters, number lines  kinaesthetic activities,  interactive smart board games |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.6** Calculate percentage change (any size increase and decrease), and original value after percentage change | Introduce percentage change as a measure of increase or  decrease.  Present scenarios where pupils calculate | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation | Can you calculate  percentage change (any size increase and decrease)? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers |

11



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | Key words:  place value, discount,  interest rate, mortgage, savings, profit margin, tax, percentage  increase/decrease | percentage change, such as sales discounts or price increases.  Pupils choose items  from a "store"  (imaginary or real  objects with price tags) and calculate the  discounted prices.  Pupils design "before" and "after" posters  showcasing a product's original value and the new value after a  percentage change.  Pupils solve percentage change problems  independently.  Learners may believe that increasing a  number by x% is the same as increasing the number by x.  Learners may make place value errors  when converting  between percentages and decimals, e.g., | Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you work back to the original value after a percentage change? | Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

12



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | they may believe 0.67 = 6.7%.  Learners may not  understand the process to work out percentage change.  Learners may use the discount % in  calculations to find the original value, e.g.,  299.25 ÷ 0.37 rather  than 299.25 ÷ (1 − 0.37), when the original value was decreased by 37% to give 299.25. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.7** Order, add, subtract, and compare amounts or quantities using proper and improper fractions and mixed numbers.  Key words:  fraction, numerator,  denominator, common denominator, improper fraction, equivalent  fractions. | Review proper and  improper fractions, and mixed numbers.  Distribute fractional  food items (e.g., pizza slices, cake pieces) to pupils. They arrange and compare the  amounts to reinforce the concept visually.  Pupils solve addition and subtraction | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you find equivalent fractions (simplify  fractions)?  Can you order fractions in ascending or  descending order and compare them?  Can you add proper and improper fractions with different  denominators? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

13



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | problems with fractions and mixed numbers using real-life scenarios like sharing treats with friends.  Pupils design recipe cards using fractions and mixed numbers, sharing delicious  concoctions with the class.  Pupils complete  comparison exercises to identify which fractions are larger or smaller.  Learners may confuse the numerator with the denominator and treat them as separate  whole numbers.  Learners may  unnecessarily and  incorrectly convert  fractions into decimals to work out values using a calculator.  Learners may fail to find a common  denominator when  adding or subtracting | interactive smart board games | Can you subtract  proper and improper fractions with different denominators?  Can you work with  mixed numbers? |  |
| --- | --- | --- | --- | --- | --- |

14



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | fractions with unlike denominators, or they may forget to apply changes to the  numerator as well.  Learners may believe that only whole  numbers should be  manipulated in  calculations with  improper or mixed  fractions. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.8** Express one number as a fraction of another  Key words:  fraction, numerator,  denominator, common denominator, improper fraction, equivalent  fractions | Introduce the concept of expressing one  number as a fraction of another.  Set up a "Fraction Fun Fair" with various games and activities. Pupils use fractions to represent different aspects, like the number of coloured balls in a jar to the total balls.  Practical Stations: At different stations, pupils measure and compare objects, then write their measurements as  fractions. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you express one number as a fraction of another? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

15



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils solve  personalized fraction problems related to the fair games.  Learners may confuse the numerator with the denominator and treat them as separate  whole numbers.  Learners may  unnecessarily and  incorrectly convert  fractions into decimals to work out values using a calculator.  Learners may fail to find a common  denominator when  adding or subtracting fractions with unlike denominators, or they may forget to apply changes to the  numerator as well.  Learners may believe that only whole  numbers should be  manipulated in  calculations with  improper or mixed  fractions. |  |  |  |
| --- | --- | --- | --- | --- | --- |

16



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | **L2.9** Order, approximate and compare decimals  Key words:  place value, degree of accuracy, terminating and recurring decimals. | Discuss the importance of decimals and their relevance in real-life situations.  Provide pupils with sets of decimal cards. Pupils order the decimals from smallest to largest  individually.  Pupils mark decimals on a large number line using sticky notes,  approximating their positions.  Divide pupils into pairs. Each pair gets a set of decimal cards. Pupils race to arrange the decimals correctly,  then switch cards with another pair for another round.  Learners may lack  understanding that the position of a numeral gives it a particular  value.  Learners may believe a longer decimal is | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you explain the value represented by a specific digit in each decimal?  Can you place  decimals in ascending and/or descending order?  Can you compare  decimals using greater than and less than  symbols? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

17



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | always larger, e.g.,  2.10746 is more than 2.234.  Learners may put the decimal point in an incorrect position  during calculations  (e.g., they may not  align figures when  adding or multiplying). |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.10** Add, subtract, multiply and divide decimals up to three decimal places  Key words?  place value, degree of accuracy, terminating and recurring decimals. | Explain the importance of decimals and their real-life applications.  Teach pupils to add and subtract decimals up to three decimal places using visual aids and examples.  Introduce multiplication and division of  decimals, utilizing  practical scenarios to make connections.  Pupils create their  shopping lists and  calculate the total cost with decimals, | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you add, subtract, multiply and divide  decimals up to three decimal places?  Can you approximate by rounding to a whole number or to one, two or three decimal  places? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

18



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | enhancing their  arithmetic skills.  Play "Decimal Dash," where pupils solve  decimal operations to move forward in a  board game.  Learners may lack  understanding that the position of a numeral gives it a particular  value.  Learners may believe a longer decimal is  always larger, e.g.,  2.10746 is more than 2.234.  Learners may put the decimal point in an incorrect position  during calculations  (e.g., they may not  align figures when  adding or multiplying). |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.11** Understand and  calculate using ratios, direct | Explain the definition and differences  between ratios, direct | Nurturing, non-judgemental, and safe space discussion | Can you understand the multiplicative  relationship between | English  PSHE  LIFE |

19



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | proportion, and inverse proportion.  Key words:  ratio notation, multiplicative relationship, proportionality, factor, constant, variable. | proportion, and inverse proportion.  Provide examples and step-by-step  calculations.  Proportional Pizza:  Divide pupils into pairs. Each pair receives  ingredients to make mini pizzas.  Use ratios to determine ingredient quantities for different-sized pizzas. Calculate direct and inverse proportion for specific toppings.  Instruct pupils to create art using proportional shapes.  Emphasize maintaining ratios and proportions while scaling the  artwork.  Learners may confuse ratio amounts with  fractions, e.g., they  may confuse 1: 3 with 1/3.  Learners may form  ratios incorrectly, e.g., if | Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | two quantities in a  ratio?  Can you simplify ratio notation?  Can you relate ratios to fractions correctly?  Can you work out  values of individual  terms in a ratio and  scale them up or  down?  Can you understand how variables are  related in direct and inverse proportion?  Can you understand the role of the constant in direct and inverse proportion? | Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

20



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | there are 10 people, 3 of whom are women, they may believe there is a 3: 10 ratios of  women to men.  Learners may form  proportional  relationships incorrectly and hence work out the value of the  constant incorrectly. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.12** Follow the order of precedence of operators, including Indices  Key words:  BIDMAS, index, timetables | Explain the importance of understanding  indices in more  complex mathematical expressions.  Provide each pupil with a set of index cards labelled with numbers and operators (+, -, \*, /, ^).  Pupils form equations using the cards and demonstrate the order of operations.  Share real-world  scenarios (e.g.,  calculating compound | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you understand that squaring means multiplying a number by itself?  Can you understand the concept of index notation?  Can you follow the  order of operations to solve calculations? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

21



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | interest, growth rates) where indices are used. Fun Competition:  Organize a "Maths  Expression Challenge" where pupils compete to solve challenging expressions using  indices.  Individual Whiteboard  Each pupil attempts to solve index-based  expressions on their  whiteboards and  displays their answers.  Discuss individual  approaches to  problem-solving and clarify misconceptions.  Learners may not  understand that indices require repeated  multiplication, not  multiplication by the index itself, e.g., 253 = 25 × 25 × 25, not 25 × 3. Learners may not follow the rules of BIDMAS and may instead complete |  |  |  |
| --- | --- | --- | --- | --- | --- |

22



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | calculations from left to right indiscriminately. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Using common measures, shape, and space** | **Activities** | **Resources and Therapeutic Input** | **Learning Objectives** | **Cross Curricula**  **Links** |
|  | **L2.13** Calculate amounts of money, compound interest, percentage increases,  decreases and discounts including tax and simple budgeting  Key words:  place value, discount,  annual interest rate,  principal sum, investment period, mortgage, savings, profit margin, tax, rebate, income, spending,  overheads. | • Learners may  believe that  increasing a  number by *x*% is the same as increasing  the number by *x*.  • Learners may  confuse discounts  with interest.  • Learners may  incorrectly convert  a percentage to a  decimal or fraction.  • Learners may round inaccurately, or  truncate figures in  the middle of their  calculations.  • Learners may lack knowledge of the  compound interest  formula.  • Learners may not follow BIDMAS. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you calculate  confidently with money, using 2 d.p accuracy and correct money notation?  Can you demonstrate knowledge of and use the compound interest formula?  Can you work out  percentages of  quantities, including increases and  decreases in a variety of money and  budgeting contexts? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

23



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | • Learners may use inconsistent time  units when  expressing  compound  frequency and  length of  investment. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.14** Convert between metric and imperial units of length, weight and capacity using a) a conversion factor and b) a conversion graph  Key words:  conversion graph,  conversion factor,  kilometres, metres,  centimetres, millimetres, miles, yards, feet, inches, kilograms, grams, stone, pounds, ounces, litres,  millilitres, gallons, fluid  ounces, cubic units, scale factor, key. | Start with a quick quiz to assess prior  knowledge.  Introduce the concept of metric and imperial units.  Present conversion  factors and  demonstrate how to use them for length, weight, and capacity conversions.  Show a conversion  graph and discuss its application.  Engage pupils with a fun activity: "Measuring Around the World."  Pupils measure | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you convert  between units of length, weight, and capacity in metric and imperial systems?  Can you calculate  using these units  accurately to three decimal places?  Can you read and  effectively use  conversion factors and conversion graphs? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

24



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | classroom objects using both metric and  imperial units, then plot their findings on a world map.  Individual practice  exercises using  conversion factors and the conversion graph.  Learners may  misunderstand scale factors when  converting units and reading scales.  Learners may  miscalculate when  using decimals. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.15** Calculate using  compound measures  including speed, density, and rates of pay  Key words:  speed, distance, time,  density, mass, volume,  compound units. | Recap basic concepts of speed, density, and rates of pay.  "Speedy Race":  Divide pupils into pairs. Provide toy cars and measuring tapes.  Pupils measure the  distance and time  taken for the toy cars to | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you recall, use and calculate using speed and density formulae?  Can you understand and convert between units of distance, time, mass, volume and  money? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

25



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | travel, calculating  speed.  "Density Tower  Challenge":  Individually, pupils  collect different objects (e.g., buttons, marbles, paperclips).  They measure the  volume and mass of each object.  Pupils construct density towers using the  objects, calculating density.  "Salary Schemes":  In pairs, pupils receive different job scenarios with hourly rates and work hours.  They calculate weekly and monthly pay for each scenario.  Learners may  miscalculate when  converting units and use inconsistent units in calculations. | Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you apply  knowledge of direct and inverse proportion to set rates of pay  formulae (equations)? |  |
| --- | --- | --- | --- | --- | --- |

26



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Learners may lack  knowledge of the  relevant formulae.  Learners may set  incorrect proportional relationships between values. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.16** Calculate perimeters and areas of 2-D shapes including triangles and  circles and composite  shapes including non  rectangular shapes  (formulae given except for triangles and circles)  **L2.17** Use formulae to find volumes and surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders)  Key words:  area, perimeter, volume, composite shape, surface area, faces, vertices, edges, radius, diameter, circle, rectangle, square,  trapezium, parallelogram, | Begin with a quick  review of formulas for calculating perimeters and areas of  rectangles, squares, and parallelograms.  Introduce the concept of triangles and circles, discussing their  properties and unique formulas.  "Shape Hunt":  Divide pupils into small groups.  Provide them with  rulers, protractors, and a list of shapes to find around the school.  Pupils measure and sketch each shape  they find.  Discuss findings as a class, calculating | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you work out the perimeter of simple and composite shapes?  Can you work out the area of simple and  composite shapes?  Can you calculate the volume of 3-D shapes, using formulae provided when necessary?  Can you calculate the surface area of 3-D  shapes, using formulae provided when  necessary?  Can you calculate  using correct units to a required level of  accuracy?  Can you recall the  required formulae (as | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

27



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | rhombus, kite, pentagon, sphere, cube, cuboid,  cylinder, cone, prism,  pyramid. | perimeters and areas of different shapes.  "Shape Art":  Provide each pupil with a blank paper,  coloured pencils, and compasses.  Ask them to create a piece of art using  different 2-D shapes and circles.  Pupils must calculate the perimeters and  areas of each shape used.  Triangles and Circles: Introduce the formulas for calculating the area of a triangle and the circumference of a circle.  Demonstrate sample problems and solve them as a class.  Hands-on Activity -  "Cylinder Creations": Provide pupils with  cardboard tubes  (cylinders), rulers, and coloured paper. |  | indicated in the  specification) for  perimeter, area, and volume. E.g.: area of rectangles, triangles, and circles? |  |
| --- | --- | --- | --- | --- | --- |

28



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils decorate the cylinders and then  calculate their volumes and surface areas using given formulas.  Recap key concepts and formulas for 2-D and 3-D shapes.  Pupils share their  creative artwork and cylinder creations with the class.  Learners may confuse the concepts of area (‘cover space’) and perimeter (‘around the space’).  Learners may  misinterpret 1-D, 2-D and 3-D units.  Learners may  miscalculate when  converting between units.  Learners may  miscalculate when  using decimals.  Learners may not follow BIDMAS when using formulae and may |  |  |  |
| --- | --- | --- | --- | --- | --- |

29



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | substitute values  incorrectly.  Learners may lack  functional thinking  when rounding, e.g., they may not round to the nearest whole  number to find the  number of boxes of tiles needed. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.18** Calculate actual  dimensions from scale  drawings and create a scale diagram given actual measurements  Key words:  2-D and 3-D shapes, line of symmetry, plan (top view), elevation (front and side view), net, faces, vertices, edges, radius, diameter, scale factors, unit  conversion. | Show examples of scale drawings and discuss their relevance.  Scale Conversion  Distribute scale  drawings of various  objects (e.g., buildings, furniture).  Pupils work individually to calculate the actual dimensions using the provided scale.  Award small prizes for the most accurate  calculations.  Provide pupils with  actual measurements | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you calculate  actual dimensions from scale drawings?  Can you create a scale diagram given actual measurements? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

30



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | of an object (e.g., a room or a garden).  Pupils individually  create a scale diagram of the object on graph paper.  Encourage creativity and attention to detail.  Pupils measure a  specific area of the classroom using tape measures.  Pupils create scale  drawings of the  measured area on  graph paper.  The most accurate  scale drawing wins a recognition certificate.  Review the key  concepts of scale  drawings and  dimension calculations. Reinforce the  importance of  accuracy in real-world applications.  Learners may not  realise that the distance |  |  |  |
| --- | --- | --- | --- | --- | --- |

31



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | from a vertex to a line of symmetry is half the total length.  Learners may confuse plans with elevations. Learners may use  incorrect scale factors. Learners may  misinterpret scales. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.19** Use coordinates in 2-D, positive and negative, to specify the positions of  points  **L2.22** Calculate values of angles and/or coordinates with 2-D and 3-D shapes  Key words:  axes, coordinates,  quadrants, scale,  protractor, bearings | Start with a real-world scenario (e.g., a  treasure map) to  capture pupils' interest. Introduce Cartesian coordinates and how they represent points on a 2-D plane.  Coordinate Treasure Hunt:  Pupils work individually to find hidden treasures using a given set of  coordinates on a map. They learn to plot and identify points in all  quadrants, including negative coordinates.  Angle Detectives: | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you read  coordinates to specify the position of a point?  Can you plot a point according to given  coordinates (in all four quadrants)?  Can you calculate  angles using knowledge of common shape  characteristics (e.g., sum of internal angles, angles at a point,  angles on a straight line, vertically opposite  angles)? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

32



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils become "angle detectives" and  measure angles of  objects in the  classroom.  They learn to calculate angles in 2-D shapes using a protractor.  Learners may confuse positive and negative coordinates.  Learners may confuse the x and y axes.  Learners may lack  knowledge of common shape characteristics. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.20** Understand and use common 2-D  representations of 3-D  objects  **L2.21** Draw 3-D shapes to include plans and elevations  Key words:  2-D and 3-D shapes, faces, vertices, edges, radius, | Show real-life 3-D  objects (e.g., pyramid, cube, sphere).  Discuss the need for 2-D representations and plans for understanding complex 3-D shapes. Emphasize the  importance of  accurate drawings. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you interpret front elevations and plans of 3-D shapes?  Can you interpret  working nets of a cube, cuboid, cylinder,  pyramid, and prism?  Can you draw  elevations and plans of simple 3-D shapes and | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

33



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | diameter, parallel,  perpendicular, angle,  triangle, quadrilateral,  pentagon, circle, cube, cuboid, cylinder, cone, prism, pyramid, line of  symmetry, plan (top view), elevation (front and side view), net. | Provide graph paper, rulers, and pencils to each pupil.  Assign different 3-D  shapes for them to  draw plans and  elevations (e.g., cube, cylinder, pyramid).  Encourage creativity and attention to detail?  Give pupils clay or  playdough to sculpt 3-D shapes from their  drawings.  Pupils can also create a 3-D model using  cardboard and  coloured paper based on their drawings.  Pupils display their 3-D models and explain the 2-D representations they used.  Classmates provide constructive feedback on accuracy and  clarity.  Present architectural or engineering plans to the pupils. | interactive smart board games | identify lines of  symmetry? |  |
| --- | --- | --- | --- | --- | --- |

34



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Discuss how 2-D  representations help in designing buildings and structures.  Learners may confuse plans with elevations. Learners may make errors relating to spatial awareness and  relevant dimensions (joining edges) when designing a net.  Learners may confuse units or misinterpret  scales. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Handling information and data** | **Activities** | **Resources and Therapeutic Input** | **Learning Objectives** | **Cross Curricula**  **Links** |
|  | **L2.23** Calculate the median and mode of a set of  quantities  **L2.24** Estimate the mean of a grouped frequency  distribution from discrete data  **L2.25** Use the mean,  median, mode and range to compare two sets of data | Start with a fun  icebreaker: Pupils guess the median and mode of ages in the class.  Briefly explain the  importance of these concepts in real-life scenarios.  Present a set of data on the board and guide pupils in finding the | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you analyse  information presented in different ways and apply statistics to  interpret it?  Can you work out the median of a set of  quantities? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

35



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | Key words:  mean, average, range, median, mode, discrete data, grouped frequency distribution, class interval, class width, midpoint,  frequency, lowest and  highest value, modal class. | median and mode  step-by-step.  Provide exercises for independent practice.  Show a discrete  dataset and a grouped frequency distribution. Teach pupils how to estimate the mean  from the grouped data. Let them apply the  technique to a new dataset.  Distribute a set of data points to each pupil. Pupils create visual  representations (e.g., bar graphs,  pictograms) of their data using craft  supplies.  Calculate mean,  median, mode, and range for each  representation.  Introduce another  dataset and help pupils calculate mean, | Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you work out the mode of a set of  quantities?  Can you estimate the mean of a grouped frequency distribution from discrete data?  Can you use the mean, median, mode and range to compare two sets of data, including discrete grouped data? |  |
| --- | --- | --- | --- | --- | --- |

36



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | median, mode, and range for both sets.  Pupils compare the  data and discuss  findings.  Learners may confuse the terms ‘range’ and ‘mean’.  Learners may confuse ‘mean’, ‘median’ and ‘mode’.  Learners may  incorrectly identify the lowest and highest  values.  Learners may not follow BIDMAS in mean  calculations.  Learners may not use the midpoint values when estimating the mean of grouped  discrete data.  Learners may divide by the number of class intervals rather than by the frequency total. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **L2.26** Work out the  probability of combined events including the use of diagrams and tables,  including two-way tables | Recall basic probability concepts (coin toss, dice roll) as a refresher. Individual Activity | Nurturing, non-judgemental, and safe space discussion  Low arousal environment | Can you understand probability on a scale from 0 (impossible) to 1 (certain)? | English  PSHE  LIFE  Individual liberty  Rule of Law |

37



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | **L2.27** Express probabilities as fractions, decimals, and percentages  Key words:  probability scale, sample space, tree diagram,  combined events,  equivalence, fair/unfair dice/coin/spinner. | Distribute sets of  coloured beads to  each pupil.  Instruct pupils to create their own unique two way table, representing various outcomes of selecting beads of  different colours.  Encourage creativity in designing the tables.  Explain combined  events and their  probabilities.  Demonstrate the use of diagrams and tables to calculate probabilities.  Provide a bag of  assorted fruits or snacks to each pupil.  Pupils work individually to record their  selections in a two-way table, showing colours and shapes.  Ask pupils to calculate the probabilities of  specific combined  events using their  tables. | Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you work out the probability of combined events including the use of diagrams and  tables?  Can you express  probability as a fraction or a decimal or  percentage  equivalent? | Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

38



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Guide them to express probabilities as  fractions, decimals, and percentages.  Organise a mini  competition for pupils to guess the probability of a random event  (e.g., drawing a card from a deck).  The pupil with the  closest estimate wins a small prize.  Learners may  misunderstand  percentage and  decimal equivalents. Learners may not  understand that the single event divided by the total number of events represents  probability.  Learners may write the probability of selecting one item out of the  number of items with the same feature,  rather than out of the total number of items. |  |  |  |
| --- | --- | --- | --- | --- | --- |

39



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | **L2.28** Draw and interpret scatter diagrams and  recognise positive and  negative correlation  Key words:  scale, labels, plotting, axes, criteria, line of best fit,  positive and negative  correlation. | Briefly explain the  purpose of the lesson and the learning  outcome.  Provide real-life  examples of scatter diagrams and  correlation.  Hand out pre-prepared data sets to each pupil. Pupils plot the data  points on graph paper to create scatter  diagrams.  Instruct them to label the axes and identify any patterns they  observe.  Teach pupils how to recognize positive and negative correlation visually.  Discuss the differences between the two types of correlation.  Introduce a creative twist: Pupils create a visual representation | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you extract and interpret information from a scatter  diagram?  Can you plot points accurately on a scatter diagram?  Can you draw a line of best fit on a scatter  diagram?  Can you describe the correlation of the data plotted on a scatter diagram?  Can you represent  discrete data on a  scatter diagram,  including accurate  plotting, labels and  selection of an  appropriate scale? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

40



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | (e.g., collage, drawing) using their scatter  diagrams to showcase positive and negative correlation.  Present a new set of data for each pupil. Pupils draw the  corresponding scatter diagrams and interpret the correlation type.  Learners may  misinterpret scales or plot points incorrectly. Learners may forget to include labels  (including a key), or labels may be  inaccurate.  Learners may  misinterpret correlation. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Number** | **Activities** | **Resources and Therapeutic Input** | **Learning Objectives 214** | **Cross Curricula**  **Links** |
| **GCSE**  **Foundati**  **on**  Maths  GCSE | | **N1** Order positive and  negative integers, decimals and fractions; use the  symbols =, ≠, , ≤, ≥  Key words: | Start with a brief recap of previous lessons on comparing numbers and basic arithmetic. Introduce the concept of ordering positive and | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation | Can you order positive and negative integers?  Can you order decimals and fractions? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers |

41



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

| Edexcel  GCSE  Mathem  atics  (2015) |  Pearson  qualifica  tions | Order  Positive  Negative  Integers  Decimals  Fractions  Symbols | negative integers,  decimals, and fractions. Engage pupils in a fun activity using coloured cards to arrange  numbers in  ascending/descending order.  Move to a creative  exercise where pupils create a number line with both positive and negative values.  Practical element:  Pupils work individually to solve real-life  scenarios involving  ordering quantities.  Review and  consolidate learning with a worksheet,  providing feedback and support where  needed.  End with a class game of "Number Riddle"  where pupils solve  order-related puzzles. | Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you use the  symbols =, ≠, , ≤, ≥? | Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |
|  | **N2** Apply the four  operations, including formal written methods, to integers, decimals and simple | Teacher-led  explanations of formal written methods for addition, subtraction, | Nurturing, non-judgemental, and safe space discussion  Low arousal environment | Can you apply the four operations, including formal written methods, to integers, decimals | English  PSHE  LIFE  Individual liberty |

42



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | fractions (proper and  improper), and mixed  numbers – all both positive and negative; understand and use place value (e.g., when working with very  large or very small numbers, and when calculating with decimals)  Key Words:  Integers, Decimals,  Fractions, Proper, Improper, Mixed Numbers, Place  Value, Formal Written  Methods, Addition,  Subtraction, Multiplication, Division, Positive, Negative. | multiplication, and  division of integers,  decimals, and fractions. Interactive examples on the board with step by-step guidance.  Pupils practice  exercises individually, focusing on all types of numbers (positive and negative) using formal methods.  Creative task: Create word problems  involving real-life  scenarios where formal written methods are needed.  Practical Element:  A practical activity  using colored  counters/chips to  model addition and subtraction of  positive/negative  integers.  Pupils work in pairs,  exchanging counters, and discussing results. Consolidation:  Mini-quiz to assess  understanding of formal | Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | and simple fractions (proper and improper)?  Can you apply the four operations, including formal written methods to mixed numbers – all both positive and  negative; understand and use place value (e.g., when working with very large or very small numbers, and when calculating with decimals)? | Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

43



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | methods and place value.  Review key terms:  integers, decimals,  fractions, place value, proper/improper  fractions, mixed  numbers, formal written methods. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N3** Recognise and use  relationships between  operations, including inverse operations (e.g.,  cancellation to simplify calculations and  expressions); use  conventional notation for priority of operations,  including brackets, powers, roots and reciprocals  Key Words: Operations, inverse, cancellation,  simplify, calculations,  expressions, conventional notation, priority, brackets, powers, roots, reciprocals. | Quick mental math exercise to warm up, involving simple  calculations with  brackets and powers. Introduction: Briefly  review previous lesson's concepts related to operations and their order.  Hands-on activity using manipulatives (e.g., building blocks) to  demonstrate the  concept of inverse  operations and how they "cancel out."  Teacher-led examples on the board, showing the use of inverse  operations to simplify | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you recognise and use relationships  between operations, including inverse  operations, and apply conventional notation for priority of  operations? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

44



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | calculations and  expressions with  brackets, powers, roots, and reciprocals. Pupils solve similar problems independently.  Distribute worksheets with various questions to reinforce the  concept. Pupils work individually.  Divide pupils into pairs. Each pair receives a set of cards with  expressions and their simplified versions.  Pupils must match them correctly.  Discuss answers as a class, emphasizing  understanding and  applying the inverse operations to simplify.  scenario exercise  where pupils apply the concept of priority of operations and  simplification. |  |  |  |
| --- | --- | --- | --- | --- | --- |

45



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Provide extra problems for pupils to solve  independently. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N4** Use the concepts and vocabulary of prime  numbers, factors (divisors), multiples, common factors, common multiples, highest  common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation  theorem  Key words:  Prime numbers  Factors  Multiples  Common factors  Common multiples  HCF (Highest Common Factor)  LCM (Lowest Common Multiple)  Prime factorisation  Product notation  Unique factorisation  theorem | Recap previous  knowledge of prime numbers and factors. Introduce new  vocabulary (common factors, common  multiples, highest  common factor, lowest common multiple,  prime factorisation,  product notation,  unique factorisation theorem).  Define prime numbers and composite  numbers.  Explore finding factors of a number.  Pupils solve  factorisation problems independently.  Define multiples and common multiples.  Pupils identify multiples of a given number. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you identify prime numbers and provide examples?  Can you find factors and multiples of given numbers?  Can you determine common factors and common multiples of number pairs?  Can you express prime factorisation using  product notation?  Can you apply the  unique factorisation theorem to find prime factorisation? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

46



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Introduce practical  examples to reinforce understanding.  Explain common  factors and their  significance.  Pupils find common factors of different  numbers.  Lowest Common  Multiple (LCM)  Define the lowest  common multiple and its application.  Pupils find the LCM of various numbers.  Explain prime  factorisation using  product notation.  Explore how prime  factorisation helps to find HCF and LCM.  Engage pupils in fun activities, like creating factor trees and  puzzles.  DIY Factorisation  Project |  |  |  |
| --- | --- | --- | --- | --- | --- |

47



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils work individually on a DIY project to  factorize numbers using the concepts learned. They showcase their factorisation artwork to the class. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N5** Apply systematic listing strategies  Key Words:  Systematic listing strategies Probability  Real-life scenarios  Order and organisation Creative thinking | Recap on basic  probability concepts. Demonstrate  systematic listing using a dice example.  Pupils roll two dice and list all possible  outcomes.  Teacher-led discussion to check pupil's lists.  Pupils design their own 6-sided dice with  different outcomes. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you apply  systematic listing  strategies to solve real life problems? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
|  | **N6** Use positive integer  powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 | Recap previous lesson on exponentiation and multiplication rules.  Interactive Whiteboard Activity (10 mins) | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation | Can you apply positive integer powers and identify square, cube, and higher roots,  especially powers of 2, 3, 4, and 5? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers |

48



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | Key Words: Exponentiation, Powers, Square, Cube, Roots, Positive Integer, Real Numbers, Multiplication, Real-World Applications. | Display various positive integer powers and real roots.  Pupils take turns  identifying the type of root (square, cube,  higher) and its value.  Play "Powers and Roots Bingo" with pre  prepared bingo cards. Call out various powers and roots, and pupils mark them on their  cards.  First pupil to get a line or full house wins a  small prize. | Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games |  | Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |
|  | **N7** Calculate with roots, and with integer indices  Key Words: Exponent,  square root, cube root, index, base, radical, power. | Explain the concept of integer indices and  roots.  Provide real-world  examples to make it relatable.  Ask pupils questions to gauge prior  knowledge. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you simplify  expressions with square and cube roots? Can you rewrite expressions using integer indices? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

49



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Teach how to calculate roots and exponents step-by-step.  Provide examples for pupils to solve  individually.  Introduce "Maths Art" activity.  Pupils create geometric shapes using  calculated roots and exponents.  Encourage creativity and critical thinking. | interactive smart board games |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N8** Calculate exactly with fractions and multiples of π  Key Words:  Fractions  π (pi)  Numerator  Denominator  Exact values  Multiples  Calculation | Explain exact  calculations with  fractions and π.  Pupils create a  "Fraction π Pizza" by dividing a circular  paper into different sectors representing fractions and multiples of π.  Pupils solve exercises involving exact  calculations with  fractions and π. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you calculate the exact value of 3/4 π?  Can you find the sum of 2π and 3/5 π?  Can you apply fraction and π calculations to find the area of a  circle?  Can you determine the circumference of a  circle using π and  fractions? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

50



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils play bingo with fractions and π on their cards, calling out the exact values. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N9** Calculate with and  interpret standard form A × 10n, where 1 ≤ A < 10 and n is an integer Fractions,  decimals and percentages  Key Words: Standard Form, Scientific Notation  Fractions, Decimals,  Percentages, Calculation, Interpretation | Introduce standard  form A × 10n and  explains its significance in scientific notation.  Pupils work on  individual exercises and worksheets to perform calculations using  standard form,  fractions, decimals, and percentages.  Pupils design their own "Standard Form Board Game" to reinforce  learning, including  question cards and calculations involving A × 10n. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you convert  ordinary numbers to standard form and vice versa?  Can you perform  calculations involving standard form?  Can you interpret and solve problems using standard form,  fractions, decimals, and percentages? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
|  | **N10** Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7 2 or 0.375 or 3 8)  Key Words:  Decimal | Introduction to  converting terminating decimals to fractions and vice versa.  Clear explanation of the relationship  between decimals and fractions. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols | Can you convert  terminating decimals to fractions and vice  versa? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills |

51



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | Fraction  Terminating  Equivalent  Convert  Interchangeably  Numerator  Denominator  Top of Form | Step-by-step examples on the board.  Individual practice  exercises.  Prepare cards with  decimals and  corresponding  fractions.  Pupils match the cards in pairs, making the correct conversions. | Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games |  | Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |
|  | **N11**Identify and work with fractions in ratio problems  Key Words:  Fractions  Ratio  Proportion  Numerator  Denominator  Equivalent Fractions | Recap on what ratios are and their relevance in real-world situations.  Distribute a set of ratio problems to students. Students work  individually to identify fractions within each ratio and simplify them. Encourage creativity by allowing students to represent ratios visually using drawings or  diagrams.  Set up a large fraction wall display.  Each student receives a fraction card, and they | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you identify  fractions in a given  ratio?  Can you simplify  fractions to their lowest terms?  Can you find equivalent fractions to represent the same ratio? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

52



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | must find an equivalent fraction on the wall.  Emphasise the  relationship between fractions and how they relate to ratio problems.  Discuss real-life  scenarios where  fractions and ratios are used, such as cooking recipes or mixing  chemicals.  Pupils create their own ratio problems involving fractions. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N12** Interpret fractions and percentages as operators  Key Words:  Fractions  Percentages  Operators  Interpret  Calculate | Recap on fractions and percentages basics. Key words: Fraction, percentage, operator, interpret, calculate.  Pupils measure  ingredients to bake a cake (fraction of  ingredients) and  calculate discounts (percentage). | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you explain what fractions and  percentages are and their significance in  mathematics?  Can you identify  fractions and  percentages as  operators in real-life scenarios?  Can you calculate  simple operations using | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

53



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Create fraction and percentage posters. Review concepts and apply them in real-life scenarios. | interactive smart board games | fractions and  percentages?  Can you apply fractions and percentages as operators in problem solving situations? |  |
| --- | --- | --- | --- | --- | --- |
|  | **N13** Use standard units of mass, length, time, money, and other measures  (including standard  compound measures) using decimal quantities where appropriate  Key Words:  Mass  Length  Time  Money  Decimal  Standard Units  Metric System  Conversions | Explain standard units and their symbols for mass, length, time, and money.  Demonstrate  conversions between different units with  decimal values.  Work through examples together as a class.  Set up various stations with measuring tasks.  Pupils rotate through stations, measuring  different objects and quantities using  standard units and  decimals. They record their results in their  workbooks. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you convert  kilograms to grams and vice versa using  decimal quantities?  Can you calculate  distances in kilometres and meters using  standard units?  Can you apply decimal money values in real-life scenarios, such as  shopping?  Can you perform time conversions between hours and minutes using decimal quantities? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

54



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | **N14** Estimate answers;  check calculations using approximation and  estimation, including  answers obtained using technology  Key Words: Estimation,  Approximation, Accuracy, Precision, Technology,  Mental Math,  Measurements. | Provide a jar of  marbles. Pupils estimate the number of marbles in the jar without  counting them.  Discuss various  strategies used for  estimation.  Pupils use calculators or a math app to  approximate complex calculations (e.g.,  square roots, fractions). Compare the results with precise  calculations.  Create a game  involving mental  estimation of simple arithmetic problems.  Pupils compete  individually to provide the closest estimate to each problem.  Pupils work in pairs with measuring tapes and objects of various sizes. They estimate and  measure the | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you distinguish  between  approximation and  estimation?  Can you justify your estimation method?  Can you apply  estimation techniques quickly and  accurately?  Can you apply  estimation skills to real life measurements? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

55



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | dimensions and  compare their  accuracy. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N15** Round numbers and measures to an appropriate degree of accuracy (e.g: to a specified number of  decimal places or  significant figures); use  inequality notation to  specify simple error intervals due to truncation or  rounding  Key Words:  Decimal places  Significant figures  Rounding  Error intervals  Inequality notation | Present examples of numbers and measures requiring rounding to a specific decimal place or significant figure.  Demonstrate the steps to round numbers  correctly using  practical examples.  Pupils solve individual exercises on rounding numbers and measures independently.  Encourage the use of whiteboards to display their answers.  Divide pupils into small groups.  Provide each group with a "Rounding Board Game" kit containing dice, cards with  numbers, and a game board with various  rounding scenarios. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you round  numbers to a specified number of decimal  places or significant figures?  Can you use inequality notation to specify  simple error intervals due to truncation or rounding? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

56



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils take turns rolling the dice and moving on the board. They pick a card with a number and must round it to the correct decimal place or significant figure to progress.  Gather pupils and  review their answers from the practice  session and the game. Introduce the concept of error intervals due to rounding.  Show how inequality notation can be used to specify these  intervals |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **N16** Apply and interpret limits of accuracy  Key words: Accuracy, upper bound, lower bound,  interval, significant figures. | Explain limits of  accuracy, how to find upper and lower  bounds, and the  significance of intervals.  Measuring and  recording real-world data using measuring instruments (rulers,  protractors, etc.). | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you explain what accuracy means in mathematics?  Can you calculate the limits of accuracy for your measurements?  Can you interpret the implications of limits of | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

57



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Discuss the importance of accuracy in various scenarios.  Pupils take turns  estimating quantities and their peers  determine the upper and lower bounds. | Counters, number lines  kinaesthetic activities,  interactive smart board games | accuracy in real-life situations? |  |
| --- | --- | --- | --- | --- | --- |
|  | **Algebra** | **Activities** | **Resources and Therapeutic Input** | **Learning Objectives** | **Cross Curricula**  **Links** |
| **GCSE**  **Foundati**  **on** | A1 Use and interpret  algebraic manipulation, including:  • ab in place of a × b  • 3y in place of y + y + y and 3 × y  • a 2 in place of a × a, a 3 in place of a × a × a, a 2 b in place of a × a × b  • a b in place of a ÷ b  • coefficients written as fractions rather than as decimals  • brackets  key words: algebraic  manipulation, coefficients, fractions, brackets. | Prepare cards with  algebraic expressions to manipulate.  Each pupil solves a  card, passes it to the next, and so on.  Encourage creativity and explain solutions aloud.  Pupils work in pairs to model real-life situations with algebraic  expressions.  Use objects to represent coefficients and  variables. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you simplify and interpret algebraic  expressions using  various algebraic  manipulation  techniques? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

58



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Discuss interpretations and how to simplify  expressions.  Algebraic Pictionary Divide pupils into  teams.  One person from each team draws an  algebraic expression. The team must guess and simplify the  expression correctly. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A2** Substitute numerical values into formulae and expressions, including  scientific formulae  Key Words:  Formulae, Expressions,  Variables, Scientific  Formulae, Substitution,  Numerical Values, Area, Perimeter, Speed, Density. | Review relevant  formulae (e.g., area, perimeter, speed) and their variables.  Recap solving basic equations with single variables.  Pupils to solve formula substitution puzzles.  Each has a set of cards with formulas, and the class can take turns substituting values.  Demonstrate how to substitute numerical values into a scientific | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you substitute  numerical values into formulae? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

59



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | formula (e.g.,  calculating density).  Pupils work on  worksheet exercises involving formula  substitutions, both  simple and complex. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A3** Understand and use the concepts and vocabulary of expressions, equations, formulae, identities,  inequalities, terms and  factors  Key words:  Formulae, Identities,  Inequalities, Terms, and Factors | Introduction to  Algebraic Concepts Warm-up: Pupils solve simple algebraic  puzzles (e.g., 2x + 5 = 15) on mini  whiteboards.  Pupils create their  algebraic expressions using coloured cards and symbols. Then, they swap cards and solve each other's  expressions.  Quick-fire quiz using mini whiteboards to reinforce the learned concepts. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you identify the difference between expressions and  equations?  Can you simplify  algebraic terms? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
|  | **A4** Simplify and manipulate algebraic expressions | Introduce key words: expressions, equations, formulae, identities, | Nurturing, non-judgemental, and safe space discussion | Can you understand and use concepts and vocabulary related to | English  PSHE  LIFE |

60



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | (including those involving surds) by:  ● collecting like terms  ● multiplying a single term over a bracket  ● taking out common  factors  ● expanding products of two binomials  ● factorising quadratic expressions of the form x 2 + bx + c, including the  difference of two squares. ● simplifying expressions involving sums, products, and powers, including the laws of indices  Key Words: Expressions, Equations, Formulae,  Identities, Inequalities,  Terms, Factors, Variables, Solving, Coefficients,  Constants | inequalities, terms,  factors.  Provide clear definitions and examples for each term.  Pupils practice  identifying and  differentiating between these concepts.  Equation Solving Race  Pupils solve simple  equations  independently on the board.  "Expression Building  Blocks"  Provide pupils with cut out cards containing numbers, variables, and operators (+, -, \*, /).  Pupils work individually to create expressions and equations.  Ask pupils to simplify their expressions and share with the class. Formulae Exploration Introduce real-life  formulae from different | Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | expressions, equations, formulae, identities, inequalities, terms, and factors? | Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |
| --- | --- | --- | --- | --- | --- |

61



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | fields (e.g., area,  volume, speed).  Pupils match formulas to their respective  applications.  Discuss the importance of understanding and using formulas.  Inequalities Challenge Pupils solve simple  inequalities on  individual whiteboards. Fun challenge: Race against time to solve as many as possible  correctly. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A5** Understand and use standard mathematical formulae; rearrange  formulae to change the subject  Key words:  formula, rearrange, subject, equation, variable, solve, mathematical, standard. | Explanation of standard mathematical formulae and the concept of rearranging formulae.  Pupils work individually on formula  rearrangement  worksheets.  Create a DIY board game where pupils  rearrange formulae to | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you demonstrate an understanding of standard mathematical formulae and  rearrange them to  change the subject? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

62



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | move ahead on the board.  Review answers and discuss problem-solving strategies.  Pupils create their own formulae puzzles for a classmate to solve.  Plenary: Present their puzzles and solutions. | interactive smart board games |  |  |
| --- | --- | --- | --- | --- | --- |
| **.** | **A6** Know the difference between an equation and an identity; argue  mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments  Key Words: Equations,  Identities, Algebraic  Expressions, Equivalent, Arguments, Algebra,  Manipulations, Creative, Bingo. | Briefly define equations and identities,  emphasise their  differences.  Teach methods to  identify equivalent  algebraic expressions and provide examples.  Pupils match  expressions for  equivalence,  promoting discussions.  Demonstrate algebraic manipulations step-by step with pupils'  engagement. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you distinguish  between an equation and an identity?  Can you argue  mathematically to show two algebraic  expressions are  equivalent?  Can you use algebra to construct and support mathematical  arguments effectively? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

63



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Creative expression challenge, where pupils create their algebraic identities.  Pupils present and  defend their  constructed arguments.  Pupils play an algebraic equivalence bingo  game to reinforce  concepts.  Recap the differences between equations and identities and  highlight the  importance of algebra in constructing sound mathematical  arguments. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A7** Where appropriate, interpret simple expressions as functions with inputs and outputs  Key Words: Functions,  Inputs, Outputs, Expressions, Interpretation. | Start with a brief  introduction to  functions and their role in Maths.  Provide examples of simple expressions and their corresponding functions. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you interpret  simple expressions as functions with inputs and outputs? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

64



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Engage pupils in a fun activity: "Function  Charades" - Pupils act out inputs and outputs for given expressions.  Pupils write expressions for given functions and vice versa.  Review and discussion on real-life applications of functions.  Recap learning  outcome and main concepts. | Counters, number lines  kinaesthetic activities,  interactive smart board games |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A8** Work with coordinates in all four quadrants  Key Words: Cartesian plane, quadrants, coordinates, x axis, y-axis. | Quick recall of  quadrants and their coordinates.  Explain Cartesian  plane, quadrants, and coordinate notation.  "Human Graphing" - Pupils become points on a large Cartesian plane marked on the floor. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you work with  coordinates in all four quadrants on a  Cartesian plane? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

65



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Plotting points in all four quadrants on  worksheets.  Coordinate Battleships - Pupils play the classic game using four  quadrant coordinates. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A9** Plot graphs of equations that correspond to straight line graphs in the  coordinate plane; use the form y = mx + c to identify parallel lines; find the  equation of the line through two given points or through one point with a given  gradient  Key Words: Graphs,  Equations, Coordinate  Plane, Straight-Line, Parallel Lines, y = mx + c, Gradient, Points, Plot, Equation. | Introduce y = mx + c form for straight-line equations.  Show examples of  plotting graphs for  given equations.  Discuss how to identify parallel lines based on the slope (m).  Hand out worksheets with equations for pupils to plot on graph paper. Pupils work individually to plot the graphs.  Check their work and provide feedback.  Divide pupils into pairs. Each pair receives a set of coordinate points and a blank graph.  They must find the  equation of the line | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you plot graphs of equations for straight line graphs in the  coordinate plane?  Can you identify  parallel lines using the form y = mx + c?  Can you find the  equation of a line  through two given  points or with a given gradient? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

66



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | passing through those points.  The first pair to correctly find the equation wins.  Pupils create their own linear equations based on given scenarios  (e.g., distance vs. time). They plot these  equations on graph paper and share with the class.  Discuss any common mistakes or challenges faced during the lesson. Reinforce key concepts and vocabulary. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A10** Identify and interpret gradients and intercepts of linear functions graphically and algebraically  Key Words:  Gradients  Intercepts  Linear functions  Graphical representation Algebraic representation Real-life applications | Explain the concept of gradients and  intercepts in linear  functions.  Show graphical and algebraic methods to identify them.  Present real-world  examples to reinforce understanding.  Provide a worksheet with graphs and | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities, | Can you identify the slope of a linear  function from its graph?  Can you find the y  intercept of a linear function algebraically?  Can you interpret the meaning of the slope in a real-world context? |  |

67



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | equations of linear  functions.  Pupils find matches  between graphs and equations.  Encourage discussions and explanations for their choices.  Pupils use graph paper and coloured  pens/pencils.  They create artwork using linear functions by plotting points and  lines.  Emphasise interpreting gradients and  intercepts while doing the activity. | interactive smart board games | Can you match a linear function's graph to its algebraic equation?  Can you create graph art using linear functions while considering  gradients and  intercepts? |  |
| --- | --- | --- | --- | --- | --- |
|  | **A11** Identify and interpret roots, intercepts, turning points of quadratic  functions graphically;  deduce roots algebraically  Key Words:  Quadratic function  Roots  Intercept  Turning point | Recap previous lesson on quadratic functions and graph plotting.  Explain learning  outcome and  objectives for the  lesson.  Present various  quadratic function  graphs and have pupils | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you identify the roots and intercepts of a quadratic function graph?  Can you determine the turning points of a  quadratic function  graph? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

68



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | Graphical interpretation Algebraic deduction  Quadratic formula | identify the roots,  intercepts, and turning points.  Discuss the significance of these points in real world contexts.  Teach pupils how to algebraically deduce the roots of a quadratic function using the  quadratic formula.  Provide practice  exercises.  Divide pupils into pairs. Provide graph paper and coloured  pens/pencils.  Instruct each pair to create their own  quadratic function  graph art by designing curves with specific roots, intercepts, and turning points.  Encourage creativity and artistic  representation.  Review the key  concepts of identifying | Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you deduce the roots of a quadratic function algebraically? |  |
| --- | --- | --- | --- | --- | --- |

69



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | and interpreting roots, intercepts, and turning points graphically.  Recap the algebraic method of deducing roots.  Ask pupils to reflect on what they learned and how they applied it during the creative  element. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A12** Recognise, sketch and interpret graphs of linear functions, quadratic  functions, simple cubic functions, the reciprocal function 1 y x = with x ≠ 0  Key Words: Linear,  Quadratic, Cubic,  Reciprocal, Graph,  Equation, Sketch, Interpret, Function. | Recap on linear and quadratic functions. Explain cubic and  reciprocal functions using real-life examples.  Pupils analyse pre  prepared graphs and identify the type of  function.  Sketch their own graphs for given equations.  Pupils search the  classroom for hidden graphs that match  specific functions. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you recognize, sketch, and interpret graphs of linear,  quadratic, simple cubic functions, and the  reciprocal function? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

70



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | They stick them on a board and discuss their choices.  Pupils create artwork using graphed  functions, exploring symmetry and patterns. Interpretation  Pupils present their  artwork and explain the functions behind them. Discuss key  characteristics of each function type. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A14** Plot and interpret  graphs (including reciprocal graphs) and graphs of non standard functions in real contexts to find  approximate solutions to problems such as simple kinematic problems  involving distance, speed and acceleration Solving equations and inequalities  Key Words: Kinematic,  Graphs, Reciprocal,  Equations, Distance, Speed, Acceleration, Solutions. | Quick mental maths exercise (e.g.,  calculating speed from given distance and time).  Discussing kinematic problems and their  relevance in real-life scenarios.  Explaining graph  plotting, interpreting reciprocal graphs, and solving equations  related to distance, | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you plot graphs, solve equations, and find approximate  solutions for kinematic problems? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

71



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | speed, and  acceleration.  Pupils work individually to plot distance-time and speed-time graphs for a given scenario.  Pupils create their own kinematic problems and exchange with a partner to solve.  Practical exercise -  Pupils measure and record data to plot a graph.  Reviewing solutions to kinematic problems and summarizing key learning points. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A17** Solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation); find  approximate solutions using a graph  Key Words: Linear  equations, unknown, | Recap solving basic linear equations with the unknown on one side.  Introduce the concept of linear equations with the unknown on both sides. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication | Can you solve linear equations with the  unknown on one side?  Can you solve linear equations with the  unknown on both sides? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

72



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  | algebraically, approximate solutions, graph, equation art. | Explain the importance of finding approximate solutions using graphs.  Teacher-led examples of solving linear  equations with the  unknown on both sides. Pupils practice solving equations  independently.  Peer-assessment and feedback.  Graphical  Demonstrate how to use graphs to find  approximate solutions. Pupils plot linear  equations and  approximate solutions on graph paper.  Teacher provides  individual support as needed.  Divide pupils into pairs. Each pair is given a linear equation to solve. Pupils graph their  equations on a large poster paper. | Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you find  approximate solutions using a graph? |  |
| --- | --- | --- | --- | --- | --- |

73



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Using markers and  colours, pupils turn their graphs into creative artwork.  Recap the key  learnings from the  lesson. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A18** Solve quadratic  equations algebraically by factorising; find  approximate solutions using a graph  Key Words:  Quadratic equations  Factorisation  Roots  Graphing  Approximate solutions  Real-world problems  Axis of symmetry  Parabola  Coefficients  Variables | Recap linear equations and introduce  quadratic equations. Explain the concept of factorisation and how it helps solve quadratic equations.  Demonstrate graphing quadratic equations on a whiteboard.  Pupils graph their  equations  independently.  Provide quadratic  equation cards and factorised form cards. Pupils match equations to their factorised forms. Fun and interactive way to reinforce the factorisation process. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you factorise  quadratic equations to find their roots?  Can you solve  quadratic equations using graphical  methods?  Can you apply the  knowledge to real  world problems? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

74



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils solve given  quadratic equations algebraically.  Pupils graph the  equations to find  approximate solutions. Provide real-world  problems to apply the concepts.  Discuss the key learning points.  Address any questions or difficulties. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A19** Solve two simultaneous equations in two variables (linear/linear algebraically; find approximate solutions using a graph  Key Words:  Simultaneous Equations Variables  Linear  Algebraic  Approximate Solutions  Graphs  Plotting  Solutions | Recap previous  knowledge: Review linear equations and graph plotting.  Explain simultaneous equations and their importance.  Step-by-step solving of linear equations  together.  Demonstrate how to plot and find solutions using graphs. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you identify the common intersection point of two lines on a graph?  Can you solve  simultaneous equations using algebraic  methods?  Can you find  approximate solutions by reading values from a graph? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

75



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils solve equations individually on  worksheets.  "Equation Challenge" - Pupils race to solve  simultaneous equations on the board.  "Equation Art" - Pupils create artwork by  plotting solutions on graph paper. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A21** Translate simple  situations or procedures into algebraic expressions or formulae; derive an  equation (or two  simultaneous equations), solve the equation(s) and interpret the solution  Key Words:  Algebraic expression  Equation  Coefficient  Variable  Solution  Simultaneous equations Substitution | Provide examples of simple situations and help pupils translate them into algebraic expressions.  Pupils work individually to translate different phrases into algebraic expressions.  Provide creative  elements like using  coloured cards to  represent variables and coefficients. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you translate the phrase "twice a  number" into an  algebraic expression?  Can you derive an  equation for the given situation?  Can you solve a single variable equation using inverse operations?  Can you solve two  simultaneous equations using elimination or  substitution? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

76



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Present real-life  problems related to the pupils' interests (e.g., shopping or sports).  Pupils derive equations from the problems they choose.  Teach solving single variable equations  step-by-step using  various examples.  Pupils solve equations individually on the  board.  Introduce the concept of simultaneous  equations.  Provide scenarios  where pupils create and solve two  equations using  substitution or  elimination methods. Interpretation of  Solutions  Discuss the meaning of the solutions in the  context of the original problems. |  | Can you interpret the solution of an equation in the context of the problem? |  |
| --- | --- | --- | --- | --- | --- |

77



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | Pupils relate the  solutions back to the real-life scenarios.  Pupils participate in a creative game where they solve equations with fun props or  interactive elements. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A22** Solve linear inequalities in one variable; represent the solution set on a number line  Key Words: inequality,  variable, solution set,  number line, greater than, less than, greater than or equal to, less than or equal to. | Start with a brief recap on solving simple linear equations.  Introduce linear  inequalities in one  variable using real  world examples.  Explain how to  manipulate inequalities using addition,  subtraction,  multiplication, and  division.  Demonstrate how to represent solutions on a number line.  Pupils practice solving inequalities individually with guided worksheets. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you solve linear inequalities and  represent the solution set on a number line? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

78



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

|  |  | "Inequality Jigsaw" -  Pupils match inequality solutions with their  corresponding number line representation. |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **A23** Generate terms of a sequence from either a term-to-term or a position to term rule  Key words:  sequence, term-to-term rule, position-to-term rule. | Start with a brief  discussion on  sequences and their importance in real-life scenarios.  Demonstrate examples of both term-to-term and position-to-term rules.  Pupils work individually to generate terms of given sequences using the rules.  Engage in a creative activity where pupils create their own  sequences and  exchange with a  partner to find the  missing terms.  Game: "Sequence  Scramble" - Pupils  match sequence cards and explain their rules. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you identify the term-to-term and  position-to-term rules for a given sequence?  Can you create your own sequence using a given rule? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

79



**Secondary Maths Block 3 Curriculum Overview (FS L2 GCSE foundation and GCSE higher tier)**

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|  | **A24** Recognise and use sequences of triangular, square and cube numbers, simple arithmetic  progressions, Fibonacci type sequences, quadratic  sequences, and simple geometric progressions (r n where n is an integer, and r is a rational number > 0)  Key Words: Triangular  numbers, Square numbers, Cube numbers, Arithmetic progression, Fibonacci  sequence, Quadratic  sequence, Geometric  progression, Rational  numbers. | Recap previous  knowledge of basic number sequences.  Explain the learning outcome and key terms (triangular, square,  cube numbers,  arithmetic progressions, Fibonacci, quadratic, geometric  progressions).  Present examples of triangular and square numbers.  Pupils identify and  create triangular and square number  sequences.  Pupils construct shapes with manipulative  materials to visualize triangular and square numbers.  Introduce cube  numbers and arithmetic progressions.  Pupils extend arithmetic progressions using cube numbers. | Nurturing, non-judgemental, and safe space discussion  Low arousal environment Zones of regulation  Pictures or symbols  Total communication  Counters, number lines  kinaesthetic activities,  interactive smart board games | Can you recognize and use sequences of  triangular, square, and cube numbers,  arithmetic progressions, Fibonacci type  sequences, quadratic sequences, and simple geometric  progressions? | English  PSHE  LIFE  Individual liberty  Rule of Law  Careers  Independence  skills  Fine motor skills  Art |

80

